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"All that part of the paper which is made to pass over the slit in the screen, by the motion of the clock, becomes now therefore successively exposed to a strong light, and is consequently brought into a state which fits it to receive a dark colour on being again washed with the usual solution, excepting those small portions upon which dark images of the lower parts of the pendulums of the electrometer are projected through the slit. These small portions of course retain the light colour of the paper; and from the long curved lines or bands, whose distances from each other, at any given part of the photograph, i. e. at any given time indicate the electric tension of the atmosphere at that time.

"By certain additions to the instrument above described, the kind as well as the tension of electrical charge is capable of being registered; and by the employment also of a horizontal thermometer, &c., it is adapted to the purposes of a *Thermograph*, as well as *Photo-barometrograph* and *Magnetograph*."

January 28, 1847.

LEONARD HORNER, Esq., Vice-President, in the Chair.

"On the Lunar Atmospheric Tide at St. Helena." By Lieut.-Colonel Edward Sabine, R.A., For. Sec. R.S.

The results of the observations made by Captain Lefroy, of the Royal Artillery, Director of the Magnetical and Meteorological Observatory at St. Helena, are here given; from which it appears, on the examination of the barometrical changes during seventeen months, that a maximum of pressure corresponds to the moon's passage over both the inferior and superior meridians, being slightly greater in the latter case, and that a minimum corresponds nearly to the rising and setting, or to six hours before and after the former periods. The average atmospheric pressures are 28·2714 inches in the first case, and 28·2675 in the last; the difference being 0·0039 inch. The height of the cistern of the barometer above the sea is 1764 feet; and the latitude of the Observatory $15^{\circ} 57' S$. These results were still further confirmed by those of a series of observations during two years. These observations also establish the conclusion that the moon exerts a greater influence on the amount of atmospheric pressure at the periods of her perigee than at those of her apogee.

February 11, 1847.

The MARQUIS OF NORTHAMPTON, President, in the Chair.

The following paper was read:—

"On the Amount of the Radiation of Heat, at night, from the

Earth, and from various Bodies placed on, or near the surface of the Earth." By James Glaisher, Esq. Communicated by G. B. Airy, Esq., F.R.S., Astronomer Royal, &c.

The author enters into a very detailed description of the construction of the thermometers he employed in these observations, and the precautions he took to ensure their accuracy; and gives tabular records of an extensive series of observations, amounting to a number considerably above ten thousand, with thermometers placed on nearly a hundred different substances, exposed to the open air, under different circumstances, and in various states of the sky, at the Royal Observatory at Greenwich.

February 18, 1847.

The MARQUIS OF NORTHAMPTON, President, in the Chair.

Edward John Rudge, Esq., was elected a Fellow of the Society.

"On the Diurnal Variation of the Magnetic Declination of St. Helena." By Lieut.-Colonel Edward Sabine, R.A., For. Sec. R.S.

It has long been known that the diurnal variation of the magnetic needle is in an opposite direction in the southern, to what it is in the northern hemisphere; and it was therefore proposed as a problem by Arago, Humboldt and others, to determine whether there exists any intermediate line of stations on the earth where those diurnal variations disappear. The results recorded in the present paper are founded on observations made at St. Helena during the five consecutive years, from 1841 to 1845 inclusive; and also on similar observations made at Singapore, in the years 1841 and 1842; and show that at these stations, which are intermediate between the northern and southern magnetic hemispheres, the diurnal variations still take place; but those peculiar to each hemisphere prevail at opposite seasons of the year, apparently in accordance with the position of the sun with relation to the earth's equator.

February 25, 1847.

The MARQUIS OF NORTHAMPTON, President, in the Chair.

The Earl of Hardwicke was elected a Fellow of the Society.

Rev. J. O. W. Haweis, M.A., was put to the ballot, but not elected.

"On certain Properties of Prime Numbers." By the Right Hon. Sir Frederick Pollock, M.A., F.R.S., Lord Chief Baron of the Exchequer, &c.